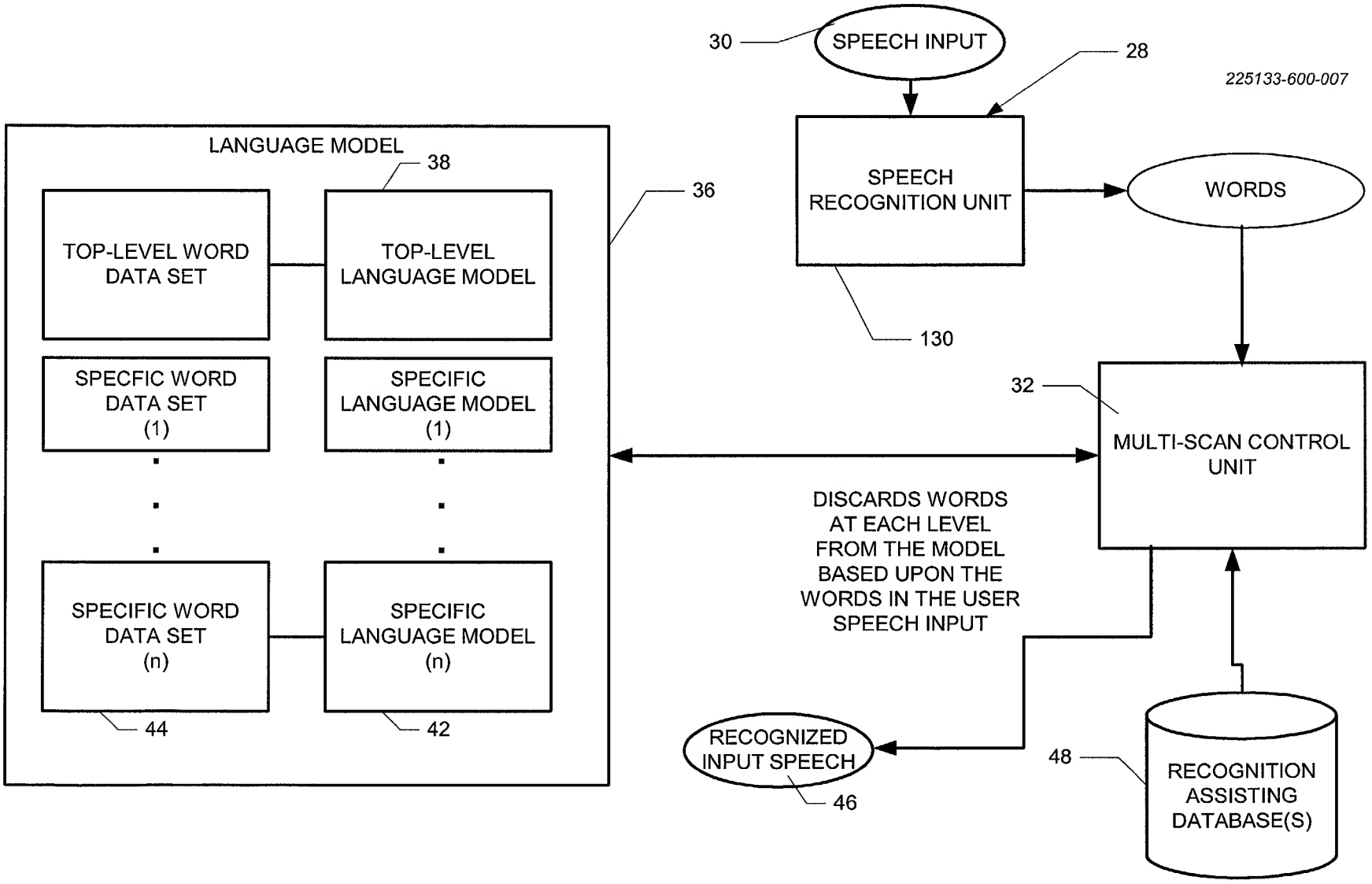

30
SPEECH INPUT
28
225133-600-007
LANGUAGE MODEL
38
36
TOP-LEVEL WORD DATA SET
TOP-LEVEL LANGUAGE MODEL
SPECFIC WORD DATA SET (1)
SPECIFIC LANGUAGE MODEL (1)
SPECIFIC WORD DATA SET (n)
SPECIFIC LANGUAGE MODEL (n)
44
42
SPEECH RECOGNITION UNIT
WORDS
130
32
MULTI-SCAN CONTROL UNIT
DISCARDS WORDS AT EACH LEVEL FROM THE MODEL BASED UPON THE WORDS IN THE USER SPEECH INPUT
RECOGNIZED INPUT SPEECH
46
48
RECOGNITION ASSISTING DATABASE(S)

FIG. 1

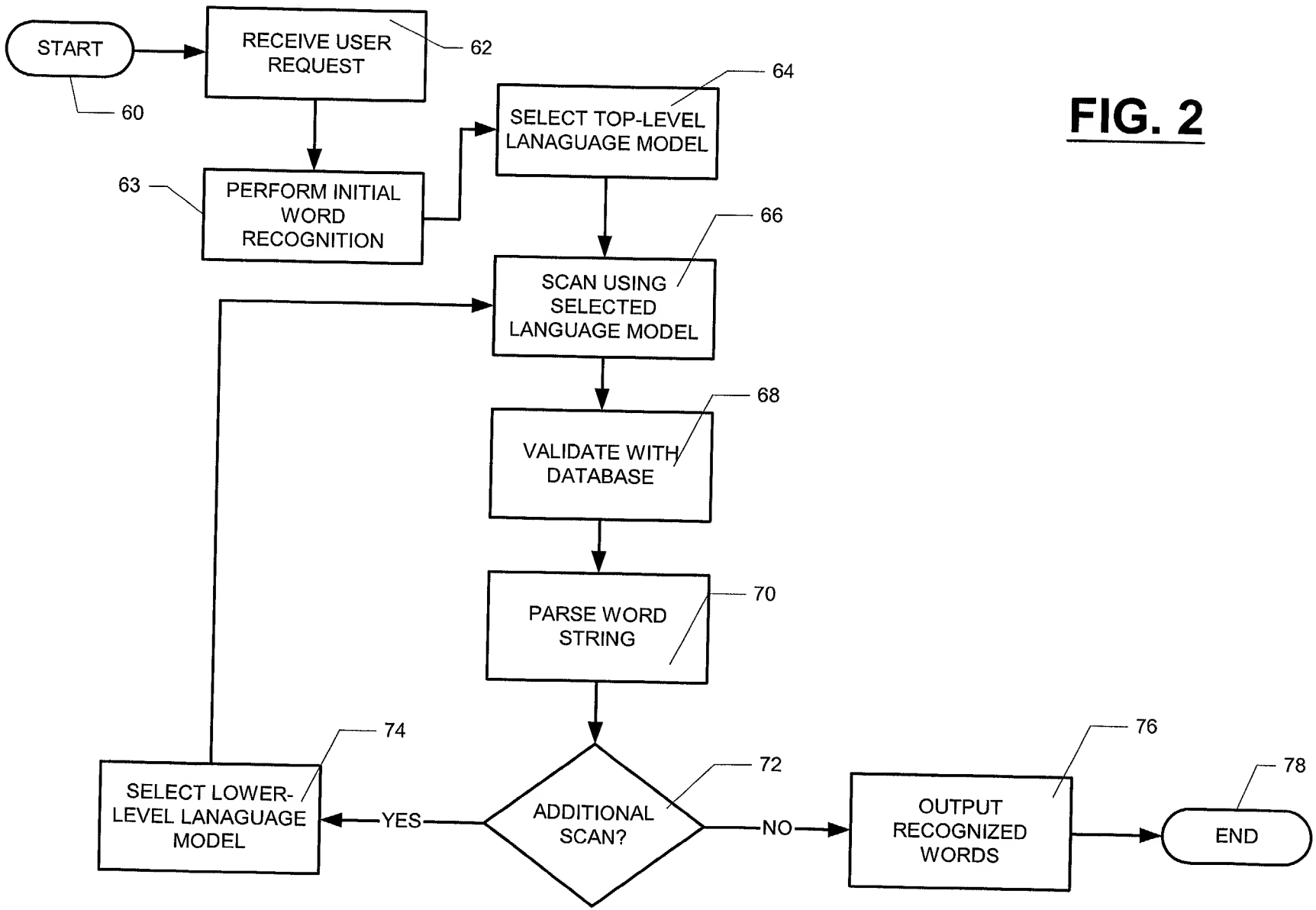
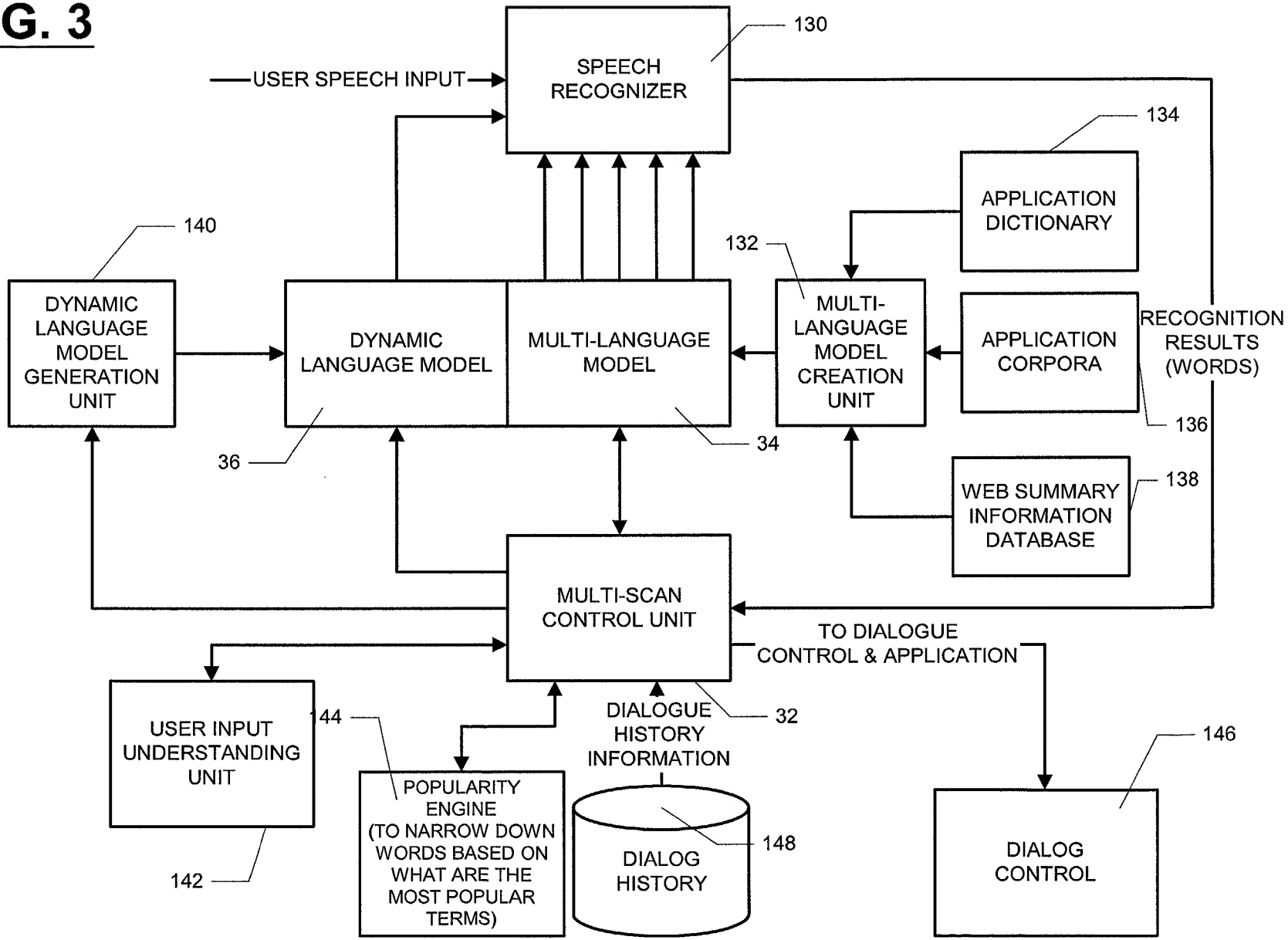

START
60
RECEIVE USER REQUEST
62
PERFORM INITIAL WORD RECOGNITION
63
SELECT TOP-LEVEL LANAGUAGE MODEL
64
SCAN USING SELECTED LANGUAGE MODEL
66
VALIDATE WITH DATABASE
68
PARSE WORD STRING
70
ADDITIONAL SCAN?
72
YES
NO
SELECT LOWER-LEVEL LANAGUAGE MODEL
74
OUTPUT RECOGNIZED WORDS
76
END
78

FIG. 2

FIG. 3


USER SPEECH INPUT
SPEECH RECOGNIZER
130
134
APPLICATION DICTIONARY
140
132
DYNAMIC LANGUAGE MODEL GENERATION UNIT
DYNAMIC LANGUAGE MODEL
MULTI-LANGUAGE MODEL
MULTI-LANGUAGE MODEL CREATION UNIT
APPLICATION CORPORA
RECOGNITION RESULTS (WORDS)
136
36
34
WEB SUMMARY INFORMATION DATABASE
138
MULTI-SCAN CONTROL UNIT
TO DIALOGUE CONTROL & APPLICATION
USER INPUT UNDERSTANDING UNIT
144
DIALOGUE HISTORY INFORMATION
32
146
POPULARITY ENGINE (TO NARROW DOWN WORDS BASED ON WHAT ARE THE MOST POPULAR TERMS)
DIALOG HISTORY
148
DIALOG CONTROL
142

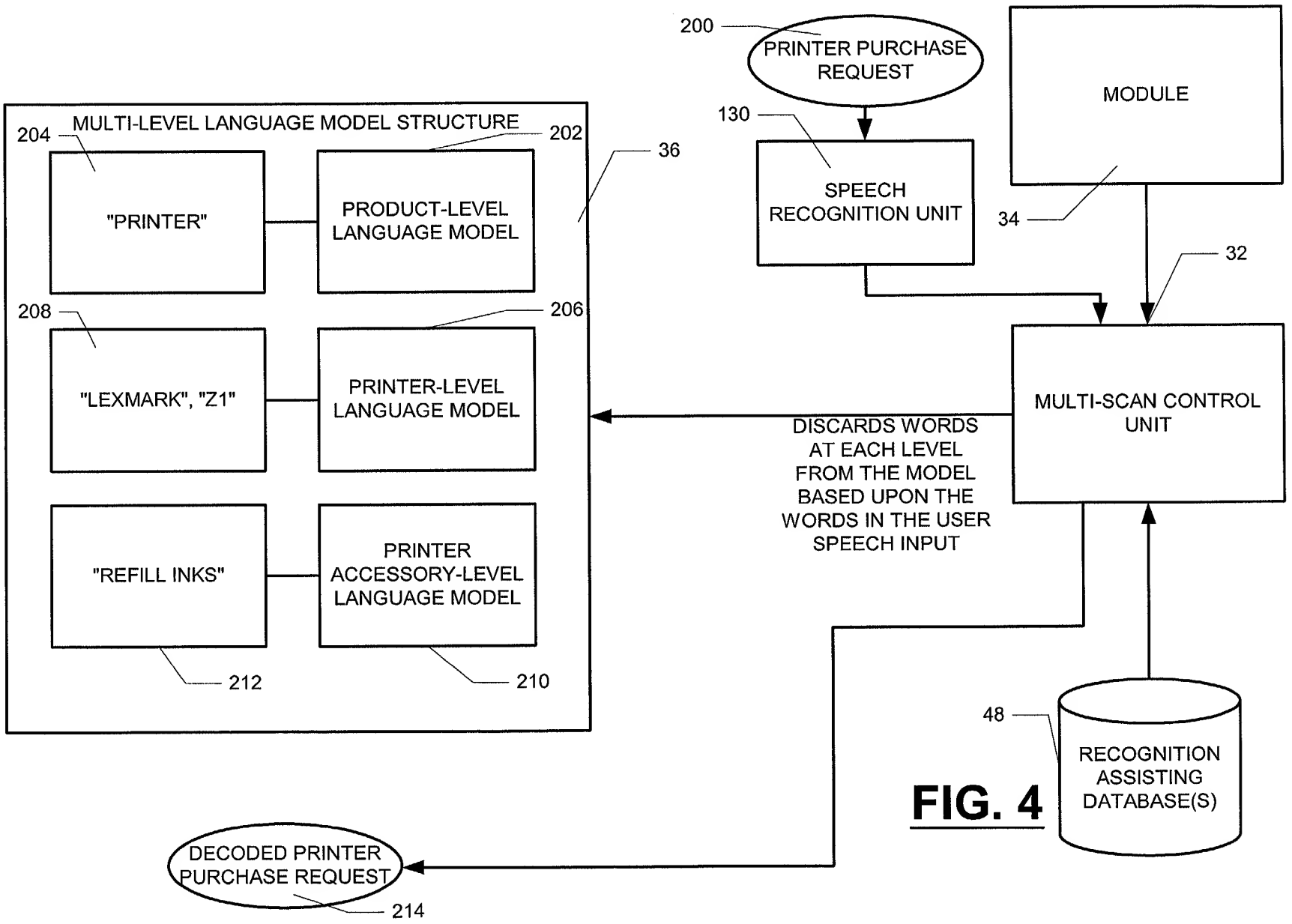

200
PRINTER PURCHASE REQUEST
MODULE
130
SPEECH RECOGNITION UNIT
34
32
MULTI-LEVEL LANGUAGE MODEL STRUCTURE
204
202
36
"PRINTER"
PRODUCT-LEVEL LANGUAGE MODEL
208
206
"LEXMARK", "Z1"
PRINTER-LEVEL LANGUAGE MODEL
"REFILL INKS"
PRINTER ACCESSORY-LEVEL LANGUAGE MODEL
212
210
MULTI-SCAN CONTROL UNIT
DISCARDS WORDS AT EACH LEVEL FROM THE MODEL BASED UPON THE WORDS IN THE USER SPEECH INPUT
48
RECOGNITION ASSISTING DATABASE(S)
DECODED PRINTER PURCHASE REQUEST
214

FIG. 4

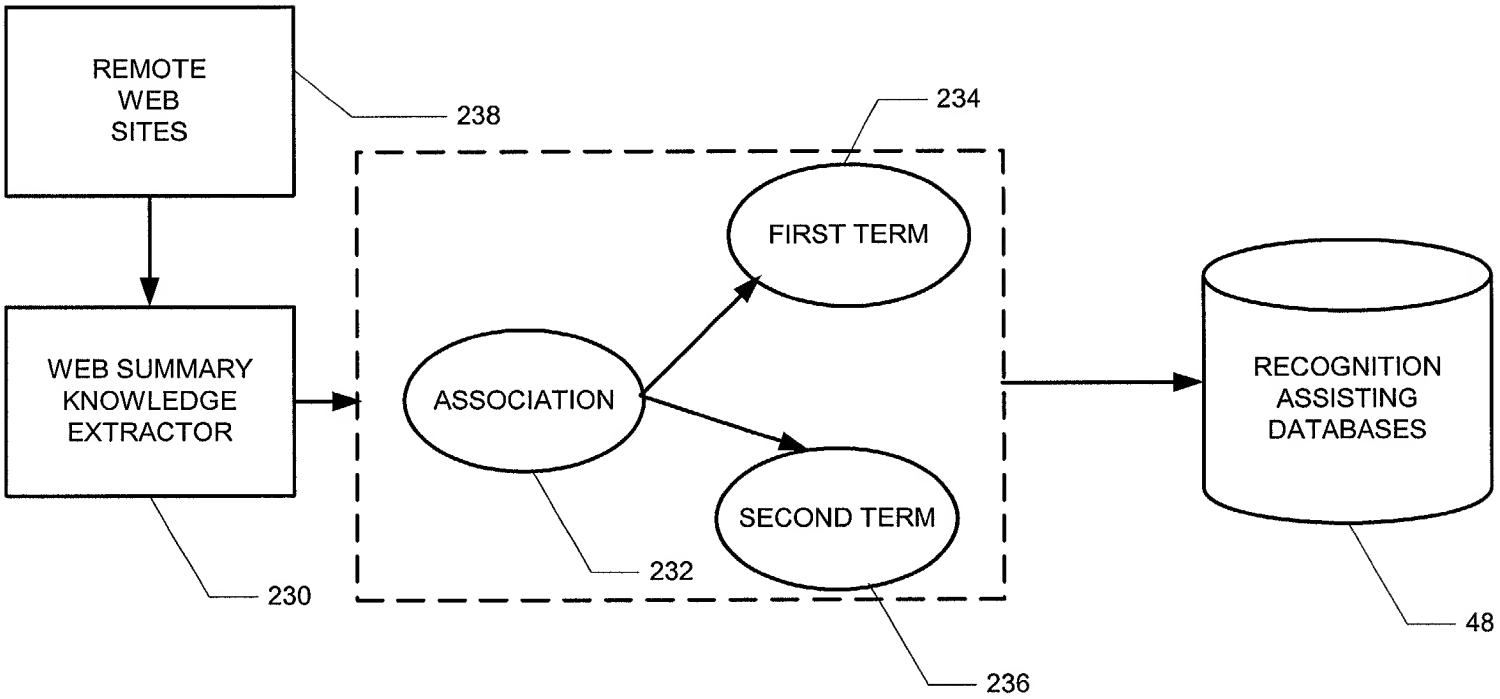

REMOTE WEB SITES
238
234
FIRST TERM
WEB SUMMARY KNOWLEDGE EXTRACTOR
ASSOCIATION
SECOND TERM
RECOGNITION ASSISTING DATABASES
230
232
236
48

FIG. 5

Translation Requested

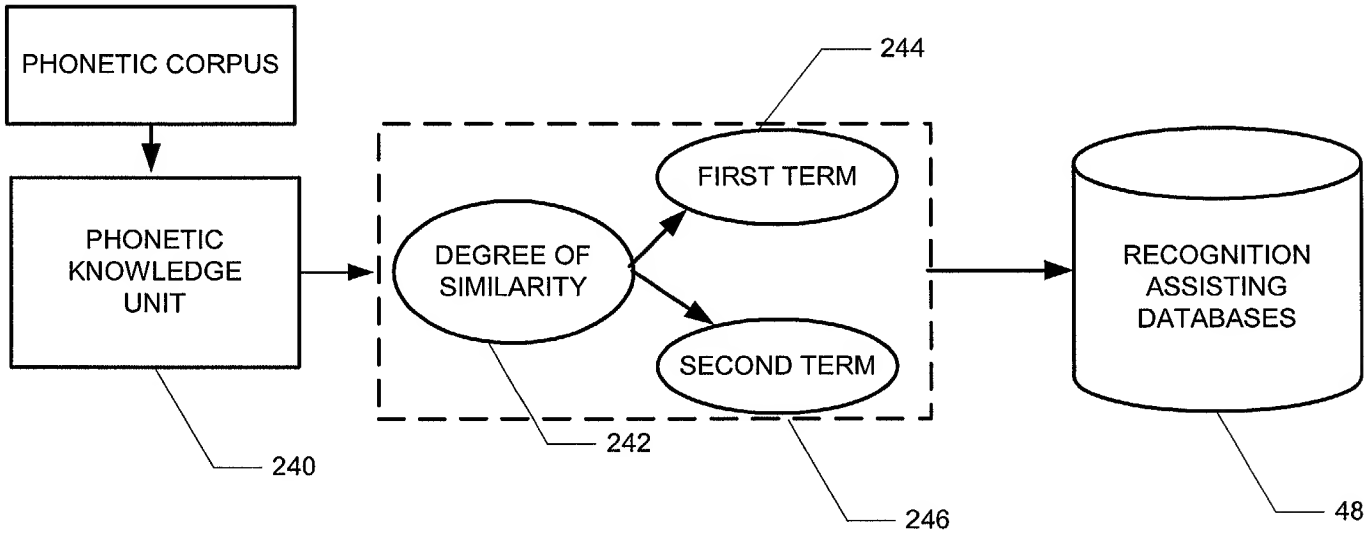


FIG. 6

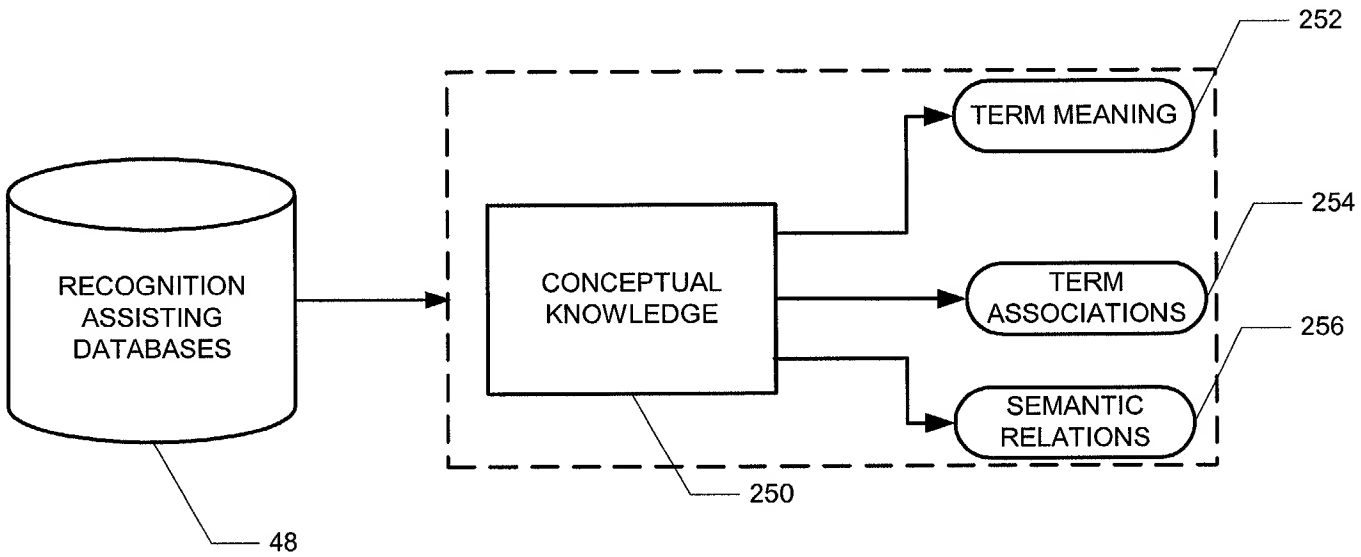

252
TERM MEANING
254
TERM ASSOCIATIONS
256
SEMANTIC RELATIONS
RECOGNITION ASSISTING DATABASES
CONCEPTUAL KNOWLEDGE
250
48

FIG. 7

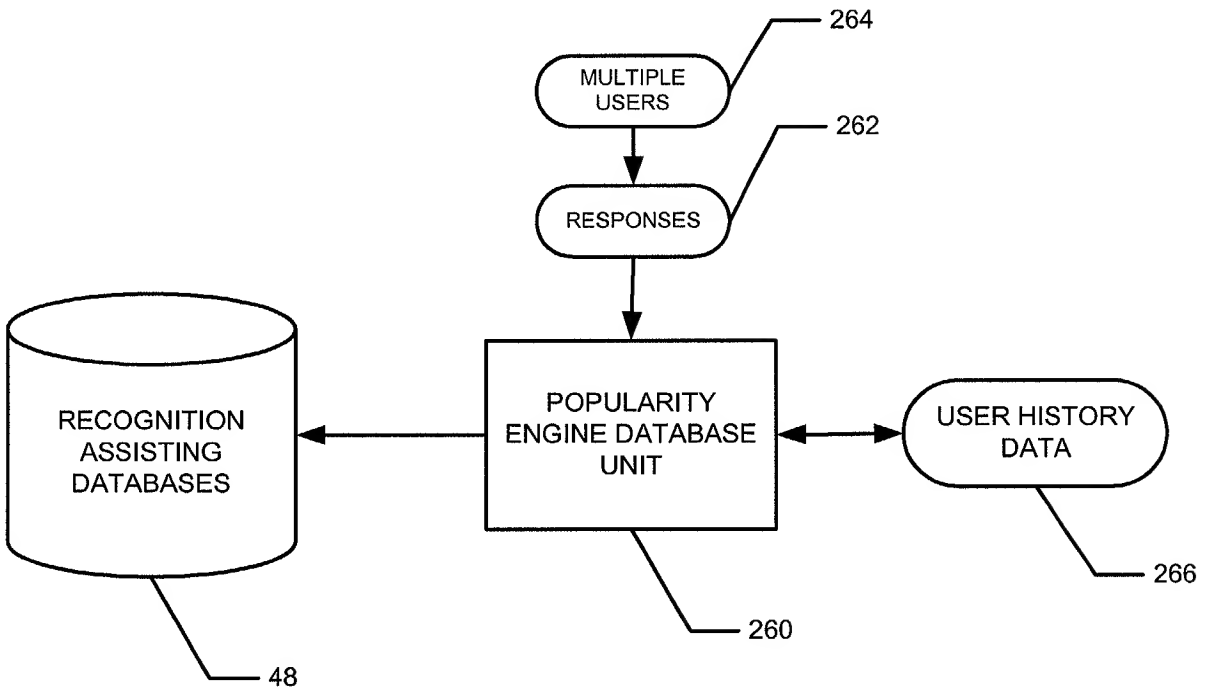

264
MULTIPLE USERS
262
RESPONSES
RECOGNITION ASSISTING DATABASES
POPULARITY ENGINE DATABASE UNIT
USER HISTORY DATA
266
260
48

FIG. 8

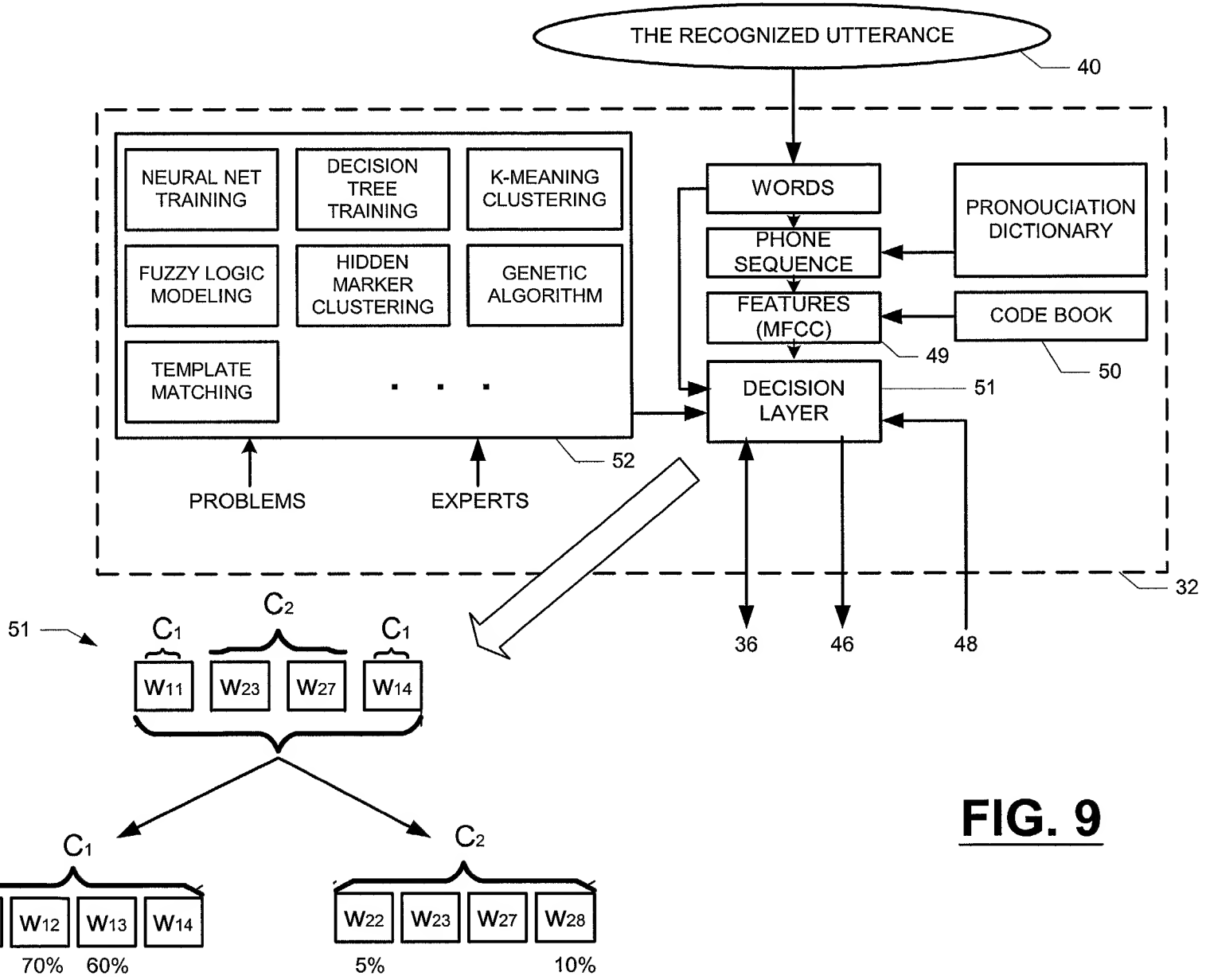

THE RECOGNIZED UTTERANCE
40
NEURAL NET TRAINING
DECISION TREE TRAINING
K-MEANING CLUSTERING
FUZZY LOGIC MODELING
HIDDEN MARKER CLUSTERING
GENETIC ALGORITHM
TEMPLATE MATCHING
. . .
52
PROBLEMS
EXPERTS
WORDS
PHONE SEQUENCE
FEATURES (MFCC)
49
DECISION LAYER
51
PRONOUCIATION DICTIONARY
CODE BOOK
50
32
36
46
48
51
C1
C2
C1
W11
W23
W27
W14
C1
C2
W11
W12
W13
W14
70%
60%
W22
W23
W27
W28
5%
10%

FIG. 9